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Arizona Corporation Commission
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December 20, 2012

Re: Redacted Intervenor Testimony and Exhibits on Behalf of Sierra Club
Docket Number E-01933A-12-0291

To Whom It May Concern:

Please find enclosed the redacted Intervenor Testimony and Exhibits of David A. Schlissel on Behalf of the Sierra Club. An original and 13 copies have been mailed to the Docket Control Office. Each of the parties on the service list was sent an electronic copy via e-mail and one hard copy via U.S. Mail.

A non-redacted version of the testimony is being provided to Chief Administrative Law Judge Lyn Farmer, the Commissioners, Janice Alward, Steve Olea, Bradley S. Carroll, Michael Patten, and Daniel Pozefsky. Other parties who wish to review the non-redacted version should contact Tucson Electric Power directly to request a copy.

Please do not hesitate to contact me if you have any questions. Thank you.

Sincerely,

James Giampietro
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Sierra Club Environmental Law Program
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NON-CONFIDENTIAL REDACTED VERSION

REDACTED INTERVENOR TESTIMONY OF DAVID A. SCHLISSEL

On Behalf of the Sierra Club

Docket No. E-01933A-12-0291

December 21, 2012

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I. Introduction

Q. Please state your name, occupation, and business address.

A. My name is David A. Schlissel. I am the President of Schlissel Technical Consulting, Inc.
My business address is 45 Horace Road, Belmont, Massachusetts 02478.

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of the Sierra Club.

Q. Please summarize your educational background and recent work experience.

A. I graduated from the Massachusetts Institute of Technology in 1968 with a Bachelor of Science Degree in Engineering. In 1969, I received a Master of Science Degree in Engineering from Stanford University. In 1973, I received a Law Degree from Stanford University. In addition, I studied nuclear engineering at the Massachusetts Institute of Technology during the years 1983-1986.

Since 1983 I have been retained by governmental bodies, publicly-owned utilities, and private organizations in 38 states to prepare expert testimony and analyses on engineering and economic issues related to electric utilities. My recent clients have included the U.S. Department of Justice, the Attorney General and the Governor of the State of New York, state consumer advocates, and national and local environmental organizations.

I have filed expert testimony before state regulatory commissions in Arizona, New Jersey, California, Connecticut, Kansas, Texas, New Mexico, New York, Vermont, North Carolina, South Carolina, Maine, Illinois, Indiana, Ohio, Massachusetts, Missouri, Rhode Island, Wisconsin, Iowa, South Dakota, Georgia, Minnesota, Michigan, Florida, North Dakota, Mississippi, Maryland, Virginia, Arkansas, Louisiana, Colorado, New Mexico, Oregon and West Virginia and before an Atomic Safety & Licensing Board of the U.S. Nuclear Regulatory Commission.

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1 A copy of my current resume is included as Exhibit DAS-1. Additional information
2 about my work is available at www.schlissel-technical.com.

3
4 **Q. Have you previously testified before the Arizona Corporation Commission?**

5 A. Yes. I have testified in Commission Dockets Nos. U-1345-85, U-1345-90-007, U-1551-
6 93-272, E-01345A-01-0822, E-01345A-03-0437, E-01345A-05-0816 and E-01345A-10-
7 0474.

8
9 **Q. Please summarize your testimony.**

10 A. Schlissel Technical Consulting was retained to investigate the reasonableness of Tucson
11 Electric Power Company's ("TEP" or "the Company") proposed Environmental
12 Compliance Adjustor ("ECA"). This testimony presents the results of my evaluation.

13
14 **Q. What information did you review as part of your analysis?**

15 A. I reviewed TEP's Application and supporting testimony. I also reviewed the Company's
16 data request responses.

17 As part of my review, I also examined the Company's April 2012 Integrated Resource
18 Plan filing and the coal plant analyses that TEP presented in that document. In addition, I
19 have reviewed materials from Arizona Corporation Commission Docket No. E-01345A-
20 11-0224 concerning Arizona Public Service Company's proposed Environmental and
21 Reliability Account.

22 **II. Conclusions and Recommendations**

23 **Q. Please summarize your conclusions.**

24 A. My conclusions are as follows:

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1. TEP's proposed Environmental Compliance Adjustor would allow the Company to recover costs associated with new investments in adding and acquiring new generating capacity, as well as environmental emissions controls, without waiting for the next general rate case.
2. TEP's proposed ECA is similar to the Environmental and Reliability Account ("ERA") that Arizona Public Service Company proposed but then withdrew in its last general rate case. The revised proposal that APS agreed to and that the ACC adopted was far more limited than either the original ERA or TEP's proposed ECA and limits APS's recovery to approximately \$5 million in the financing costs for environmental compliance investments.
3. Under the Company's proposed procedure for the ECA, the Company's ratepayers could pay for months or even years the costs incurred due to imprudence.
4. The ACC's Integrated Resource Planning ("IRP") process, although beneficial and essential for prudent planning, does not allow for an adequate review/approval of proposed environmental compliance costs and other generating projects.
5. The Company has revised its projected natural gas prices since it prepared the coal plant economic analyses that it submitted as part of its 2012 IRP. Using TEP's newer natural gas price forecast has a significant impact on the cost of the natural gas-fired combined cycle alternative that the Company considered in those economic analyses. For example, just changing the natural gas prices makes building a new combined cycle unit a lower cost option in TEP's levelized cost analysis than retrofitting the San Juan Generating Station.
6. TEP is currently heavily dependent on coal-fired generation and plans to remain so throughout the 2012-2027 resource planning period.
7. There are significant risks and uncertainties created by TEP's heavy reliance on its existing coal-fired generating plants. These include: (a) the potential for higher coal prices; (b) the potential for lower than projected operating performance or higher than forecasted operating costs at the coal plants; (c) the potential for the adoption of a state, regional or federal greenhouse gas reduction regime that places a cost on CO₂ emissions; and (d) the potential need for larger investments to meet currently anticipated or future environmental regulations.
8. TEP failed to allow for these risks and uncertainties in the coal plant analyses it presented in its 2012 IRP. Consequently, the information and analyses that TEP included in its IRP are not adequate for determining whether the large expenditures that the Company testifies it will need to retrofit its existing coal plants are economically justified.

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9. TEP does not present any analyses of the impact that adoption of the proposed ECA would have on its financing costs.

10. TEP has not demonstrated that its proposed ECA would reduce the number or frequency of general rate cases or that such a reduction would benefit its ratepayers.

Q. What are your recommendations?

A. I am recommending that the Commission:

1. Reject TEP's proposed ECA and, instead, require the Company to seek recovery of environmental compliance expenditures by demonstrating prudence in a general rate case.

2. Allow all interested parties a reasonable opportunity to review, and if they desire, to present expert testimony on TEP's plans for major environmental upgrades, plant divestiture or retirement decisions, or resource acquisition decisions before they are made.

III. Environmental Compliance Adjustor

Q. Please describe TEP's proposed Environmental Compliance Adjustor?

A. The proposed ECA would allow TEP to recover costs associated with new investments in environmental emissions controls and in adding and acquiring new generating capacity without waiting for the Company's next general rate case. For expenditures that are not yet in service by the end of the year, TEP would be allowed to recover the on-going carrying costs on the investments. For a plant that is placed in service by year-end, TEP would recover a return on the investment, depreciation expenses, taxes, and the associated O&M costs.¹

Q. How does TEP explain how its proposed ECA would work?

A. According to TEP's proposed Plan of Administration, the Company would file its calculated ECA rate, including supporting data, on or before March 1. Unless the

¹ Direct Testimony of David G. Hutchens, at page 26, line 22, to page 27, line 7.

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Commission has otherwise acted to suspend the filing by May 1, the new ECA rate proposed by TEP would go into effect with the first billing cycle in May and would remain in effect for the following 12-month period.

Q. How does TEP define the investments that would qualify for inclusion in the ECA?

A. TEP's proposed Plan of Administration ECA includes the following definitions for investments that would qualify for recovery through the ECA:

ECA Qualified Investments – (Investments in Qualified Environmental Compliance projects.) Each ECA Qualified Investment shall: 1) be classified in one or more of the FERC Plant In-Service, Completed Construction no Classified or CWIP accounts listed in Section 3 of this document, or any other successor FERC account, upon going into service, and 2) be tracked by a specific project number.

Qualified Environmental Compliance Projects – Qualified ECA investments include those projects designed to comply with current or prospective environmental standards required by federal, state, tribal, or local laws and regulations. In general, these environmental standards apply, but are not limited to the following: sulfur dioxide, nitrogen dioxide, carbon dioxide, ozone, particulate matter, volatile organic compounds, mercury and other toxics, coal ash and other combustion residuals and water intake.

Q. Would the ECA include more than environmental compliance costs?

A. Yes. Although TEP's testimony generally avoids this fact and instead focuses heavy emphasis on environmental compliance costs for its existing generating units in its testimony, the ECA also would allow recovery of costs associated with the acquisition and addition of new generating plant between general rate cases. In fact, I'm aware of only a single mention in TEP's testimony of the fact that the proposed ECA would provide recovery of the costs of generation capacity acquisitions or additions between general rate cases as well as the costs of required environmental improvement projects.²

² Direct Testimony of David G. Hutchens, at page 29, lines 22-25.

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1 **Q. Is TEP's proposed ECA similar to the Environmental and Reliability Account**
2 **("ERA") that Arizona Public Service Company ("APS") proposed in its last general**
3 **rate case in 2011?**

4 A. Yes. TEP's proposed ECA is very similar to the ERA that APS originally proposed in
5 Docket No. E-01345A-11-0224. However, APS ultimately withdrew that proposal during
6 settlement negotiations and, instead, agreed to a much more limited modification to its
7 existing Environmental Improvement Surcharge. ("EIS") Under the new proposal that
8 was approved by the ACC as part of the Settlement Agreement for APS's general rate
9 case, APS would no longer receive customer dollars through the EIS to pay for
10 government mandated environmental controls. However, when APS invests capital to
11 fund any environmental controls, the EIS would recover the associated capital carrying
12 costs subject to a \$0.00016/kWh cap, at least through the end of that Company's next
13 general rate case.³ This would be the same as the roughly \$5 million in environmental
14 compliance carrying costs that APS had been recovering annually prior to the general rate
15 case. APS also "will be held responsible for demonstrating that the environmental
16 controls were government-mandated and represented a reasonable and prudent option
17 available to the Company at that time sufficient to meet the environmental
18 requirements."⁴

19 Consequently, the environmental compliance cost recovery that was ultimately agreed to
20 by APS and approved by the ACC was significantly more limited than what TEP is
21 proposing through the ECA.

³ See the Direct Settlement Testimony of Leland R. Snook on behalf of Arizona Public Service Company in Docket No. E-01345A-11-0224, filed January 18, 2012, at page 7, line 19, to page 8, line 5.

⁴ General rate case Settlement Agreement, Paragraph 11.3, attached as part 16 of 22 to the ACC's Decision No. 73183 in Docket No. E-01345A-11-0224.

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1
2 **Q. Would the Commission have a reasonable opportunity to review the prudence of the**
3 **investments and related costs that TEP seeks to recover from ratepayers through**
4 **the ECA before the new rates go into effect?**

5 A. No. According to TEP's Plan of Administration, the Company would file the calculated
6 ECA rate for the upcoming year on or before March 1. Unless the Commission has
7 otherwise acted to suspend the filing by May 1, the new ECA rate proposed by TEP
8 would go into effect. Consequently, the Commission would have only two months to
9 review the prudence of the investments that the Company is seeking to recover through
10 the ECA unless it decided to suspend the filing.

11
12 **Q. What opportunities would the Commission then have to review the prudence of the**
13 **investments and the related costs that TEP is seeking to recover through the ECA?**

14 A. There seem to be three possibilities. First, the Commission could suspend the ECA and
15 then set a contested case for determining the prudence of the investments and the costs
16 that the Company is seeking to recover. Second, the Commission could allow the new
17 ECA rates to go into effect, presumably subject to refund, while conducting a prudence
18 review. And third, the Commission also could allow the new ECA rates to go into effect,
19 presumably subject to refund, while deferring the question of prudence to the Company's
20 next general rate case. Under the second and third options, ratepayers could be paying
21 imprudent costs until the question of prudence was finally decided by the Commission, a
22 period that could last months, if not years.

23 The Company has claimed that the implementation of the ECA might reduce the
24 frequency of, and the need to file, general rate cases, thereby reducing the impact on its
25 customers and the amount of Commission resources expended on TEP-related issues.⁵
26 This might not be true if the Commission needs to suspend each year's ECA rates in
27 order to conduct a prudence review of TEP's major generation-related expenditures.

⁵ Direct Testimony of David G. Hutchens, at page 29, line 22, to page 30, line 4.

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Adoption of the ECA also would remove the incentive for efficiency that is created by regulatory lag.

Q. Consequently, is it correct that imprudent costs could be passed along to ratepayers under TEP's proposed ECA?

A. Yes.

A) The Integrated Resource Plan Does not Provide Adequate Review/Approval of the Proposed Environmental Compliance Costs

Q. Doesn't the Commission's new Integrated Resource Planning ("IRP") process represent an adequate review/approval of proposed environmental compliance and other generating projects?

A. No. The IRP process, although beneficial and essential, does not substitute for the in-depth analyses, based on the most current circumstances and data, which a contested proceeding such as a pre-approval docket or rate case provides. Companies need to conduct detailed and specific analyses before they decide whether to make expensive investments in environmental compliance modifications at existing power plants or to add or acquire new generating capacity. The Company acknowledges this in its April 2012 IRP when it states:

It is important to note that while the Reference Case includes TEP's existing coal portfolio, the decisions as to whether or not TEP continues to maintain its ownership and leasehold interests in each coal plant is subject to numerous, changing variables, such as retrofit costs, replacement power costs and availability, coal and natural gas price forecasts, other plant owner's decisions, site lease extensions and associated costs, final Environmental Protection Agency (EPA) and legal proceeding's outcomes and ACC policy directives. TEP will continue to evaluate each such investment decision in this evolving environment and supplement the IRP as appropriate.⁶

⁶ TEP 2012 IRP, at pages 17 and 18.

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1 And:

2 As with any planning analysis, the 2012 IRP represents a snapshot in time based
3 on existing conditions and reasonable planning assumptions. Even after the 2012
4 IRP filing date, TEP anticipates that the plant participants will continue to work
5 through the complex issues surrounding plant operating agreements, fuel
6 contracts, land leases, transmission contracts and lease purchase options before
7 the final resource decisions are made. As shown in Figure 1, the final decision on
8 whether TEP continues to invest in its existing coal-fired facilities or in other
9 replacement resources will be determined on a plant by plant basis over the course
10 of the next 12-18 months after the 2012 IRP filing.....⁷

11 The Company's plant-by-plant analyses that provide the level of detail necessary to
12 determine prudence are not fully addressed in an IRP. The IRP therefore is not a
13 substitute for the detailed review, including the right for parties to intervene and conduct
14 confidential discovery that a pre-approval docket or a rate case would provide.

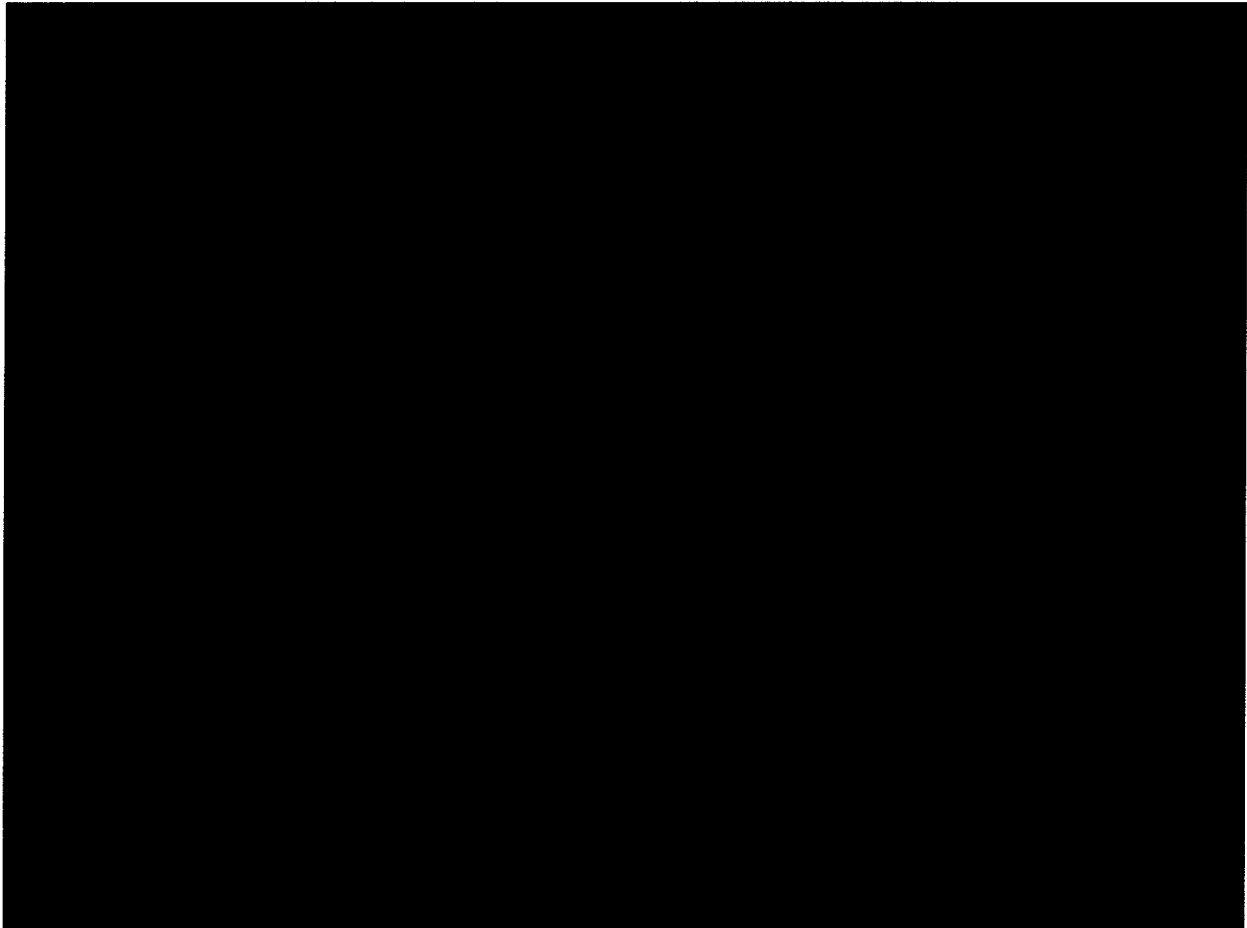
15
16 **Q. Can you give any examples of a key variable that has changed since TEP filed its**
17 **2012 IRP last spring?**

18 **A.** Yes. Figure 1, below, shows that TEP's current natural gas price projections are
19 significantly [REDACTED] than the natural gas prices it used in the coal plant analyses in its 2012
20 IRP.

⁷ Id. at page 18.

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Figure 1: TEP's IRP versus Current as of October 22, 2012 Natural Gas Price Projections



In fact, as can be seen from Figure 1, the Company's current natural gas price forecast is [REDACTED] even the "low" forecast it used in the coal plant economic analyses in its IRP.

Q. Have recent NYMEX Permian Basin natural gas futures prices changed since October 22, 2012?

A. Yes. NYMEX Permian Basin natural gas futures prices for 2013 and 2014 actually were slightly lower in the past week than they were on October 22nd.

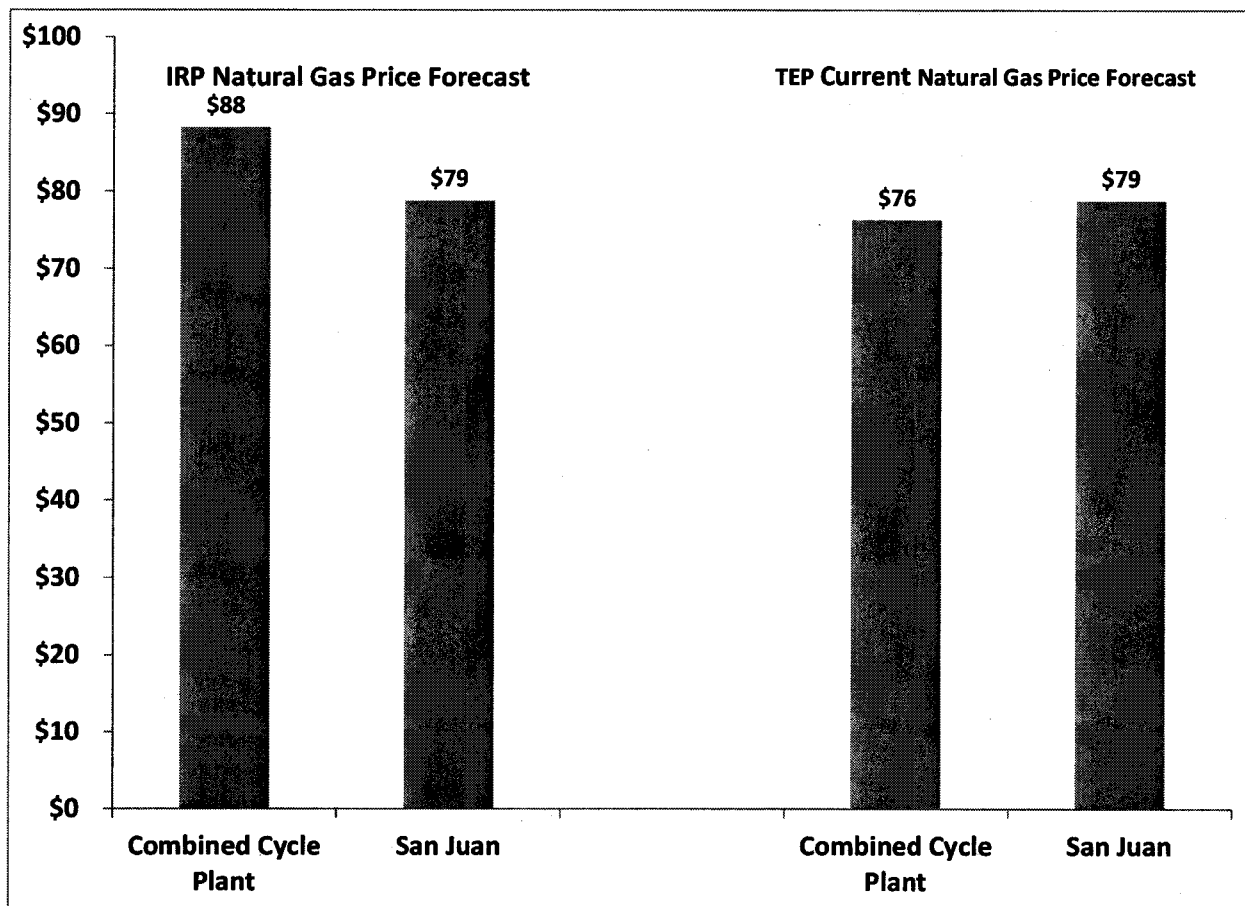
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Q. What impact would using TEP's current natural gas price forecast have on the results of the individual coal plant economic analyses presented in the IRP?

A. Using TEP's [REDACTED] current natural gas price forecast would reduce the cost of the new natural gas-fired combined cycle alternative and improve the relative economics of that alternative compared to the continued operation of the coal units.

In fact, just changing the natural gas prices makes building a new combined cycle unit a lower cost option in TEP's levelized cost analysis than retrofitting the San Juan Generating Station, as shown in Figure 2, below.

Figure 2: San Juan Levelized Cost Comparison - TEP's IRP versus Current Natural Gas Price Forecasts



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1 **Q. Would TEP's [REDACTED] current natural gas price forecast costs also affect the NPV of**
2 **Portfolio Cost comparisons presented in the IRP?**

3 A. Yes. Using [REDACTED] natural gas prices would reduce or eliminate the cost advantage shown
4 to continued operation of each of the Company's coal plants.

5
6 **Q. Were you able to review the workpapers for these Portfolio Cost comparisons?**

7 A. No. TEP declined to provide them, saying that they were the property of Ventyx, the
8 Company's modeling consultant.

9
10 **Q. Does the Company's Levelized Cost comparison understate the long-term value of**
11 **adding a new generating unit in 2017 as compared to continuing to operate TEP's**
12 **existing coal plants?**

13 A. Yes. The Company's Levelized Cost comparison for the years 2012-2027 does not
14 consider that a new generating unit will have a much longer remaining service life at the
15 end of 2027 than TEP's existing coal plants.

16 For example, TEP currently assumes that a new combined cycle power plant will have a
17 45 year operating life and that the expected service lives for simple cycle steam-
18 generating units should be set at 60 years.⁸ Table 1, below, shows the expected remaining
19 lives for all of TEP's coal units and a new combined cycle unit added in 2017.

⁸ Direct Testimony of Mark C. Mansfield, at page 3, lines 23-26.

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Table 1: Expected Remaining Service Lives in 2027

Unit	Age in 2027 (Years)	Remaining Expected Service Life in 2027 (Years)
Springerville Unit 1	42	18
Springerville Unit 2	37	23
San Juan Station Unit 1	51	9
San Juan Station Unit 2	54	6
Navajo Station Unit 1	53	7
Navajo Station Unit 2	52	8
Navajo Station Unit 3	51	9
Four Corners Unit 4	58	2
Four Corners Unit 5	57	3
New Natural Gas-Fired Combined Cycle Unit	10	35

Thus, a new combined cycle unit will have a far longer expected remaining life in 2027 even if each of the Company's existing coal plants were expected to operate beyond a 60 year operating life. The Levelized Cost comparison does not reflect this possibility. TEP's NPV Portfolio Cost analyses also may not. However, I can't be certain because I have not had access to those materials.

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1 **Q. Is it your testimony that TEP should pursue a new natural gas-fired combined cycle**
2 **plant?**

3 A. Not at all. I used the example of a new combined cycle unit to demonstrate how the
4 Company's least-cost resource analysis can substantially change from its last IRP. The
5 purpose of this example is to show that TEP should engage in comprehensive and
6 detailed analyses that are subject to review by the Commission and intervenors before
7 committing to the large capital expenditures that would be within the scope of the ECA.
8 TEP would have to complete a thorough resource evaluation analysis before committing
9 its customers to the construction of a new generating resource. Such an analysis is
10 beyond the scope of my testimony here.

11
12 **B) TEP's Heavy Reliance on Coal Fired Power Plants Creates Risks for its**
13 **Customers**

14 **Q. How dependent is TEP on generation from coal-fired power plants?**

15 A. The Company's 2012 IRP shows that TEP obtains 80.1% of its generation from its coal-
16 fired facilities.⁹

17
18 **Q. Doesn't the Company's 2012 IRP also show that TEP's proposed resource plan**
19 **would reduce its dependence on coal-fired generation?**

20 A. The IRP does show that, under its proposed resource plan, by 2027 coal would represent
21 only 64.7% of its total generation. However, there are two important facts to emphasize
22 about this figure. First, depending on coal for nearly 65% of its generation is still a heavy
23 dependence. Second, and most significantly, TEP is not projecting any reduction in the
24 generation of coal at its existing coal-fired power plants. The percentage of coal in its fuel
25 mix would drop from 80.1% in 2012 to 64.7% in 2027 in its resource plan due to the

⁹ TEP 2012 IRP, at Chart 1, on page 22.

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1 addition of new energy efficiency, utility scale renewable resources and distributed
2 generation and not as the result of any reduced generation from coal.¹⁰

3 **Q. What are the risks posed by such a continued heavy dependence on coal-fired**
4 **generation?**

5 A. There are several significant risks and uncertainties created by TEP's planned continued
6 heavy reliance on its existing coal-fired generation plants. These include: (a) the potential
7 for higher coal prices; (b) the potential for lower than projected operating performance or
8 higher than forecast operating costs at the coal plants; (c) the potential for the adoption of
9 a state, regional or federal greenhouse gas reduction regime that places a cost on CO₂
10 emissions; and (d) the potential need for larger investments to meet currently anticipated
11 or future environmental regulations.

12
13 **Q. Did TEP's IRP coal plant analyses adequately reflect these risks faced by existing**
14 **coal-fired power plants?**

15 A. No. Although TEP prudently looks at ranges of future natural gas prices and wholesale
16 power prices as sensitivities to reflect the potential uncertainties in those prices, it does
17 not do the same for coal prices, future plant operating performance or operating costs, the
18 cost of future CO₂ emissions and/or the cost of meeting current and future environmental
19 regulations.

20 For example, although the Company's average coal prices increased at an average of
21 6.2% annually between 2005 and 2011 (7.5% annually between 2007 and 2011), TEP
22 optimistically has assumed that coal prices will only escalate at an average annual 2.7%
23 rate between 2012 and 2027.¹¹ The Company also does not allow for any uncertainty or
24 risk that the actual non-fuel O&M (both fixed and variable) at its existing coal plants will
25 be higher than it now projects.

¹⁰ See Chart 7 on page 36 of TEP's 2012 IRP.

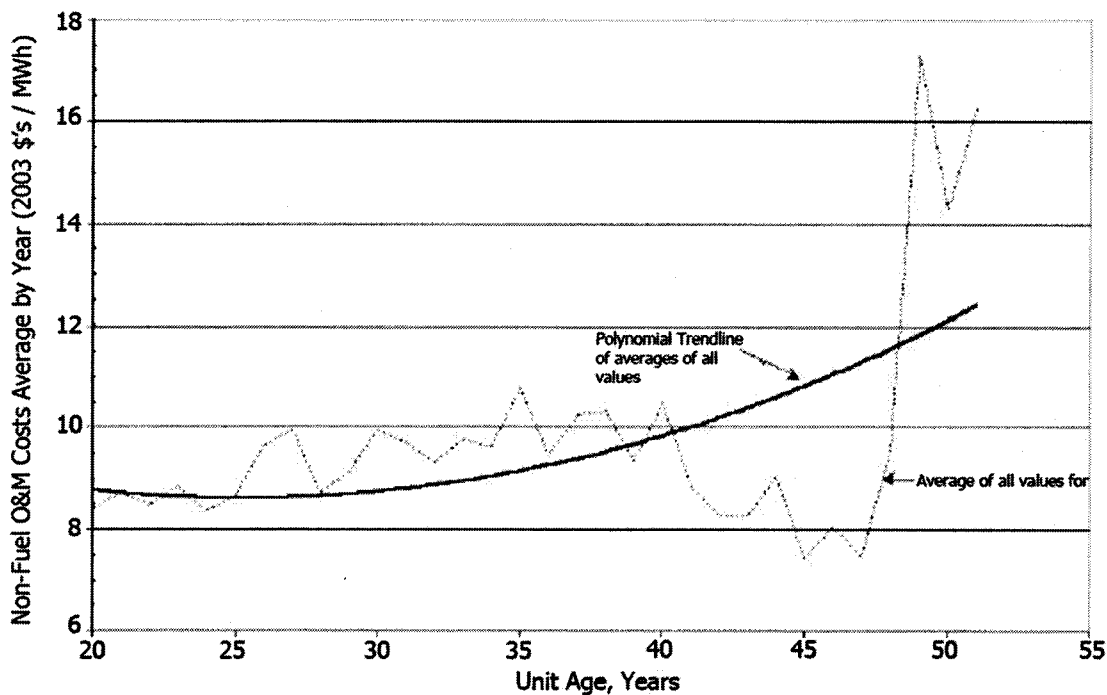
¹¹ Id. at Chart 63 on page 289.

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1 **Q. Have you seen any evidence that suggests that coal plant non-fuel O&M is expected**
2 **to increase significantly as a coal plant ages?**

3 **A.** Yes. Figure 3, below, is taken from Public Service of New Mexico's San Juan
4 Generating Station Harvesting Study. It reflects the expectation that as the San Juan
5 Generating Station ages, its non-fuel O&M will increase at a rate significantly higher
6 than the overall rate of inflation.

7 **Figure 3: Non-Fuel O&M Cost vs. Age from PNM's SJGS Harvest Study**



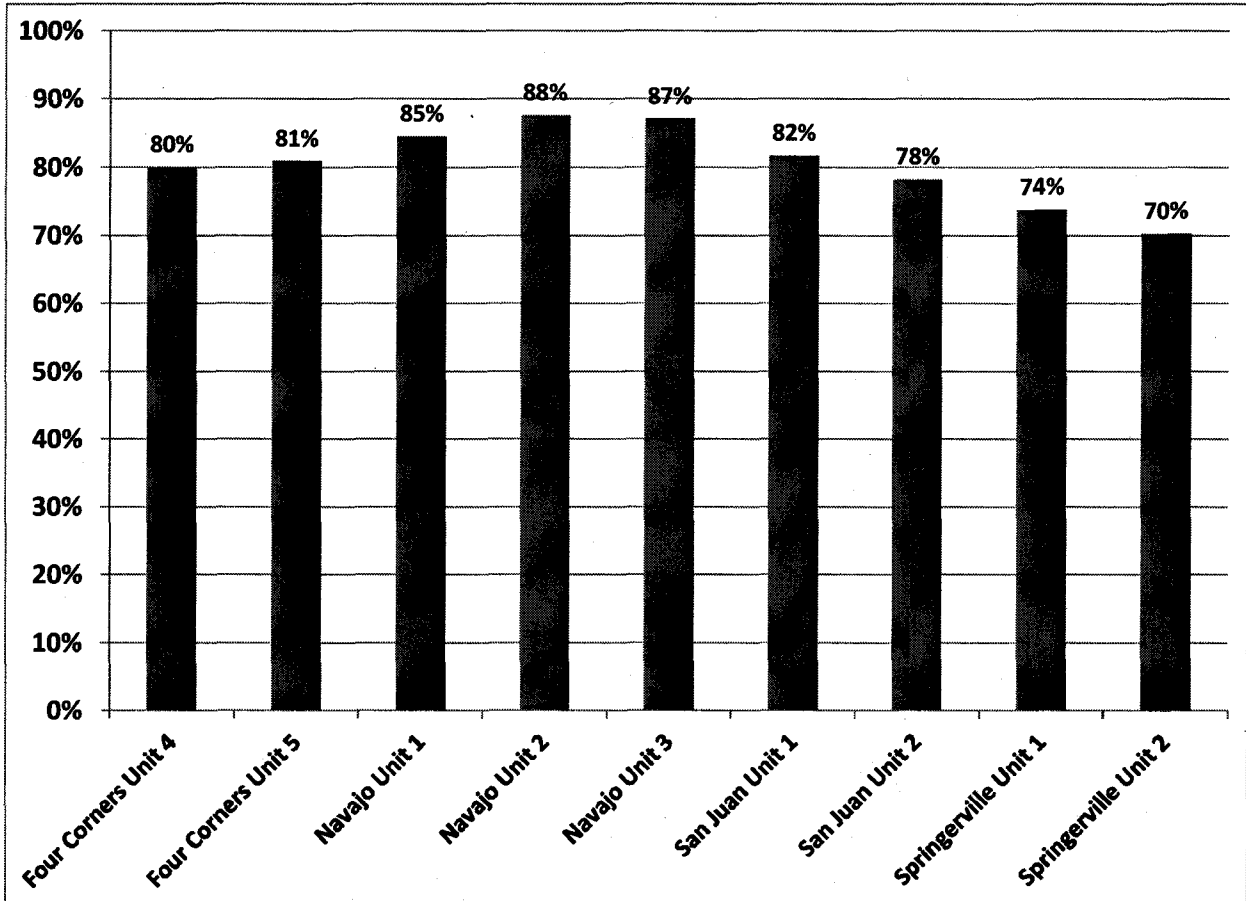
8
9 **Q. Does TEP assume in its coal plant analyses that some of its existing coal units will**
10 **operate better in the next 15 years than they have in recent years?**

11 **A.** Yes. TEP assumes in its Levelized Cost comparisons that each of its existing coal plants
12 will operate at an 85 percent capacity factor for the period 2012 through 2027. This 85
13 percent capacity factor would be higher than the capacity factors that most of the

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Company's coal units achieved during the seven year period 2005-2011¹², as shown in Figure 4, below:

Figure 4: TEP Coal Unit Average Annual Capacity Factors for the years 2005-2011.



Thus, only the three Navajo Units actually have achieved 85% or higher average annual capacity factors in the most recent 7 year period.

Q. Does TEP allow for any uncertainty in the future CO₂ prices it assumed in its IRP coal plant analyses?

A. Although TEP is to be commended for including a CO₂ price in its IRP analyses, the Company failed to consider a range of possible future CO₂ prices. This is significant

¹² 2007 is the last full year for which operating data is available.

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1 given the substantial uncertainty associated with the timing, design and stringency of a
2 possible CO₂ regulatory regime. The Company has requested Commission approval to
3 pass through future greenhouse gas costs to its ratepayers through its PPFAC, without
4 any restriction on how high those prices may be.¹³ It should, then, be required to look at a
5 range of possible CO₂ prices that is higher than the single price trajectory in its IRP.
6

7 **Q. In its testimony, does the Company acknowledge the uncertainty regarding the**
8 **scope, cost, and schedule of new environmental regulations?**

9 A. Yes. The Company discusses the uncertainties surrounding new environmental
10 regulations at some length in its testimony in this proceeding. For example, at pages 30
11 and 31 of his Direct Testimony, TEP witness Michael J. DeConcini discusses anticipated
12 environmental controls that will be required at the Company's generating units.
13

14 **Q. Does TEP identify the potential costs of these anticipated environmental controls?**

15 A. Yes. TEP witness Paul J. Bonavia testifies that the Company is facing "capital
16 investments of approximately \$300 million over the next five years to cover the costs
17 associated with new environmental mandates affecting several power plants."¹⁴ Mr.
18 Hutchens then testifies that, depending on the final outcome of certain proposed
19 regulations, TEP's total capital outlays could approach \$400 million, in addition to
20 annual increases in O&M costs in the tens of millions of dollars."¹⁵

¹³ Direct Testimony of David G. Hutchens, at page 41, lines 12-21.

¹⁴ Direct Testimony of Paul J. Bonavia, at page 14, lines 18-26.

¹⁵ Direct Testimony of David GT. Hutchens, at page 24, line 17, to page 25, line 15.

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1 **Q. Is it reasonable to expect that there will be other potential environmental**
2 **regulations, beyond those discussed by TEP in this docket that could affect the**
3 **future operating costs or the need for further capital investments at any of TEP's**
4 **existing coal-fired generating units?**

5 A. Yes. There are other possible environmental compliance costs due to further changes in
6 other regulations such as stricter national ambient air quality standards (NAAQS) for
7 emissions such as ozone and fine particulate matter.

8
9 **Q. Have you seen any evidence that the Company reflected any uncertainty in future**
10 **environmental compliance costs in its IRP coal plant economic analyses?**

11 A. No.

12
13 **Q. Was it reasonable for TEP to exclude from its IRP coal plant economic analyses any**
14 **consideration of uncertainty in future environmental compliance costs?**

15 A. No. Arizona Administrative Code R14-2-704 provides that TEP must consider in its
16 resource plan all relevant resources, risks, and uncertainties, as well as the best
17 combination of expected costs and associated risks for TEP and its customers. As the
18 Company's testimony notes, there is significant uncertainty regarding the future timing,
19 stringency and cost of federal environmental regulations. For this reason, it would have
20 been prudent for TEP to have considered a range of future environmental costs in the
21 Company's IRP coal plant economic analyses.

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1 **Q. You have identified a number of significant risks for existing coal-fired power**
2 **plants: low natural gas prices, higher than projected coal and non-fuel O&M costs,**
3 **CO₂ emissions costs, lower than expected operating performance, and the potential**
4 **costs of meeting environmental standards. Have other electric companies faced**
5 **these same risks and the need to decide whether to retrofit or retire their existing**
6 **coal plants?**

7 **A.** Yes. This is not an issue that only TEP faces. Virtually all other electric utilities around
8 the nation are facing the same risks and the same questions about the continued economic
9 viability of their existing coal plants. Many companies have decided to retire coal-fired
10 generating capacity on the basis of the types of detailed risk and economic analyses I
11 have discussed in this testimony. Some examples of companies that have decided to retire
12 coal plants include Duke Energy, Progress Energy, AEP, FirstEnergy, Portland General
13 Electric, and PacifiCorp.

14 In fact, according to an October 2012 study by the Brattle Group, attached here as Exhibit
15 DAS-2, as of July 2012, approximately 30 gigawatts ("GW") of coal plant capacity had
16 announced plans to retire by 2016.¹⁶ The study further found that another 29-47 GW of
17 coal plant capacity (for lenient vs. strict scenarios) was likely to retire instead of retrofit
18 with environmental equipment.¹⁷ These retirements are expected to occur absent any
19 future regulations restricting carbon emissions.

20 When utilities and their regulatory commissions take a close look at their coal plants in
21 rate or resource-specific dockets, they often realize that making further major investments
22 in these plants is not the least cost alternative.

¹⁶ *Potential Coal Plant Retirements: 2012 Update*, the Brattle Group, October 2012.

¹⁷ *Id.*

NON-CONFIDENTIAL REDACTED VERSION

1 **Q. Is the information and analyses that TEP included in its IRP adequate for making a**
2 **determination of whether large capital expenditures at its coal plants are**
3 **economically justified?**

4 **A.** No. As I have discussed above, the coal plant analyses in TEP's IRP do not reasonably
5 account for the significant risks and uncertainties associated with continued operation of
6 the Company's existing coal-fired power plants.

7
8 **Q. TEP stated in its 2012 IRP that it plans to communicate any major environmental**
9 **upgrade, plant divestiture decision or resource acquisition decision to the ACC.¹⁸**
10 **Should other parties have an opportunity to review and comment on these**
11 **decisions?**

12 **A.** Yes. It is important to thoroughly evaluate the prudence or reasonableness of a major
13 investment decision before it is made. Decisions on major environmental upgrades, plant
14 divestments, or resource acquisitions will affect rates for years, if not decades. All
15 interested parties should have a reasonable opportunity to review and, if they desire,
16 present expert testimony critique and/or offer potential alternative options.

17
18 **Q. TEP witness Hutchens discusses the theoretical impact of adoption of the proposed**
19 **ECA on the Company's financing costs.¹⁹ Does the Company have any analyses of**
20 **the impact that adoption of the proposed ECA would have on its financing costs?**

21 **A.** No. TEP has said that "While the proposed ECA would clearly reduce the cost recovery
22 lag on environmental investments, no analyses were done to quantify the impact on the
23 Company's financing costs."²⁰

¹⁸ TEP's 2012 IRP, at page 337.

¹⁹ Direct Testimony of David G. Hutchens, at page 29, line 22, to page 30, line 4.

²⁰ TEP's response to Data Request SC 1.21.

NON-CONFIDENTIAL REDACTED VERSION

1 **IV. Conclusion**

2 **Q. What is your conclusion regarding the Company's proposed ECA?**

3 A. The Commission should reject TEP's proposed ECA and, instead, require the Company
4 to seek recovery of environmental compliance expenditures by demonstrating prudence
5 in a general rate case.*
6

7 **Q. Does this complete your testimony?**

8 A. Yes.
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Index of Exhibits

Exhibit DAS-1: Curriculum vitae of David A. Schlissel

Exhibit DAS-2: The Brattle Group Discussion Paper: Potential Coal Plant
Retirements: 2012 Update (October 2012)

Exhibit DAS-1

David A. Schlissel

President

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SUMMARY

I have worked for thirty six years as a consultant and attorney on complex management, engineering, and economic issues, primarily in the field of energy. This work has involved conducting technical investigations, preparing economic analyses, presenting expert testimony, providing support during all phases of regulatory proceedings and litigation, and advising clients during settlement negotiations. I received undergraduate and advanced engineering degrees from the Massachusetts Institute of Technology and Stanford University, respectively, and a law degree from Stanford Law School.

PROFESSIONAL EXPERIENCE

Electric Resource Planning - Analyzed the economic costs and benefits of energy supply options. Examined whether there are lower cost, lower risk alternatives than proposed fossil and nuclear power plants. Evaluated the economic and system reliability consequences of retiring existing electric generating facilities. Investigated whether new electric generating facilities are used and useful. Investigated whether new generating facilities that were built for a deregulated subsidiary should be included in the rate base of a regulated utility. Assessed the reasonableness of proposed utility power purchase agreements with deregulated affiliates. Investigated the prudence of utility power purchases in deregulated markets.

Coal-fired Generation – Evaluated the economic and financial risks of investing in, constructing and operating new coal-fired power plants. Analyzed the economic and financial risks of making expensive environmental and other upgrades to existing plants. Investigated whether plant owners had adequately considered the risks associated with building new fossil-fired power plants, the most significant of which are the likelihood of federal regulation of greenhouse gas emissions and construction cost increases.

Power Plant Air Emissions – Investigated whether proposed generating facilities would provide environmental benefits in terms of reduced emissions of NO_x, SO₂ and CO₂. Examined whether new state and federal emission standards would lead to the retirement of existing power plants or otherwise have an adverse impact on electric system reliability.

Power Plant Water Use – Examined power plant repowering as a strategy for reducing water consumption at existing electric generating facilities. Analyzed the impact of converting power plants from once-through to closed-loop systems with cooling towers on plant revenues and electric system reliability. Evaluated the potential impact of the EPA's Proposed Clean Water Act Section 316(b) Rule for Cooling Water Intake Structures at existing power plants.

Electric System Reliability - Evaluated whether existing or new generation facilities and transmission lines are needed to ensure adequate levels of system reliability. Investigated the causes of distribution system outages and inadequate service reliability. Examined the reasonableness of utility system reliability expenditures.

Power Plant Repowering - Evaluated the environmental, economic and reliability impacts of rebuilding older, inefficient generating facilities with new combined cycle technology.

Power Plant Operations and Economics - Investigated the causes of more than one hundred power plant and system outages, equipment failures, and component degradation, determined whether these problems could have been anticipated and avoided, and assessed liability for repair and replacement costs. Examined power plant operating, maintenance, and capital costs. Evaluated utility plans for and management of the replacement of major power plant components. Assessed the adequacy of power plant quality assurance and maintenance programs. Examined the selection and supervision of contractors and subcontractors.

Nuclear Power – Reviewed recent cost estimates for proposed nuclear power plants. Examined the impact of the nuclear power plant life extensions and power uprates on decommissioning costs and collections policies. Examined the reasonableness of utility decisions to sell nuclear power assets and evaluated the value received as a result of the auctioning of those plants. Investigated the significance of the increasing ownership of nuclear power plants by multiple tiered holding companies with limited liability company subsidiaries. Investigated the potential safety consequences of nuclear power plant structure, system, and component failures.

Transmission Line Siting – Examined the need for proposed transmission lines. Analyzed whether proposed transmission lines could be installed underground. Worked with clients to develop alternate routings for proposed lines that would have reduced impacts on the environment and communities.

Electric Industry Regulation and Markets - Examined whether generating facilities experienced more outages following the transition to a deregulated wholesale market in New England. Evaluated the reasonableness of nuclear and fossil plant sales, auctions, and power purchase agreements. Analyzed the impact of proposed utility mergers on market power. Assessed the reasonableness of contract provisions and terms in proposed power supply agreements.

Expert Testimony - Presented the results of management, technical and economic analyses as testimony in more than 100 proceedings before regulatory boards and commissions in 35 states, before two federal regulatory agencies, and in state and federal court proceedings.

Litigation and Regulatory Support - Participated in all aspects of the development and preparation of case presentations on complex management, technical, and economic issues. Assisted in the preparation and conduct of pre-trial discovery and depositions. Helped identify and prepare expert witnesses. Aided the preparation of pre-hearing petitions and motions and post-hearing briefs and appeals. Assisted counsel in preparing for hearings and oral arguments. Advised counsel during settlement negotiations.

TESTIMONY, AFFIDAVITS, DEPOSITIONS AND COMMENTS

Indiana Utility Regulatory Commission (Cause No. 43114 IGCC 8) – June 2012

Startup and pre-operational testing delays at Duke Energy Indiana's Edwardsport IGCC Project.

Mississippi Public Service Commission (Docket No. 2009-UA-014) – March 2012

Petition to Reopen the docket based on changed circumstances.

Georgia Public Service Commission (Docket No. 34218) – November 2011

The reasonableness of Georgia Power Company's proposed fossil plant decertification/retirement plan.

Maryland Public Service Commission (Case No. 9271) – October 2011

The reasonableness of Constellation Energy Group's proposed divestiture of three coal-fired power plants as mitigation for market power concerns arising from its proposed merger with Exelon Corporation.

Minnesota Public Utilities Commission (Docket No. E017/M-10-1082) – August and September 2011

Whether the proposed addition of the Big Stone Plant Air Quality Control System is a lower cost alternative for the ratepayers of Otter Tail Power Company than retirement of the Plant and replacement by a natural gas-fired combined cycle unit possibly combined with new wind capacity.

Indiana Utility Regulatory Commission (Cause No. 43114 IGCC 4S1) – June, July, and October 2011 and June 2012

Duke Energy Indiana's imprudence and gross mismanagement of Edwardsport IGCC Project.

Kansas State Corporation Commission (Docket No. 11-KCPE-581-PRE) – June 2011

The reasonableness of the proposed environmental upgrades at the La Cygne Generating Station Units 1 and 2.

Arizona Corporation Commission (Docket No. E-01345A-10-0474) – May 2011

The reasonableness of Arizona Public Service Company's proposed acquisition of Southern California Edison's share of Four Corners Units 4 and 5.

Public Utility Commission of Colorado (Docket No. 10M-245E) – September, October and November 2010

The reasonableness of Public Service of Colorado's proposed Emissions Reduction Plan.

Indiana Utility Regulatory Commission (Cause No. 43114 IGCC 4S1) – July, November and December 2010

The reasonableness of Duke Energy Indiana's new analyses of the economics of completing the Edwardsport Project as an IGCC plant.

Oregon Public Utility Commission (Docket LC 48) – May and August 2010

Comments and Reply Comments on Portland General Electric Company's 2009 Integrated Resource Plan.

South Dakota Public Service Commission (Docket No. EL-09-018) – April 2010

The reasonableness of Black Hills Power Company's 2007 Integrated Resource Plan and the Company's decision to build the Wygen III coal-fired power plant.

Michigan Public Service Commission (Docket No. U-16077) – April 2010

Comments on the City of Holland Board of Public Works' 2010 Power Supply Study.

Illinois Commerce Commission (Tenaska Clean Coal Facility Analysis) – April 2010

Comments on the Facility Cost Report for the proposed Taylorville IGCC power plant.

North Carolina Utilities Commission (Docket No. E-100, Sub 124) – February 2010

The reasonableness of the 2009 Integrated Resource Plans of Duke Energy Carolinas and Progress Energy Carolinas.

Mississippi Public Service Commission (Docket No. 2009-UA-014) – December 2009

The costs and risks associated with the proposed Kemper County IGCC power plant.

Public Service Commission of Wisconsin (Docket No. 05-CE-137) –December 2009 and January 2010

The costs and risks associated with the proposed installation of emissions control equipment at the Edgewater Unit 5 coal-fired power plant.

Public Service Commission of Wisconsin (Docket No. 05-CE-138) –September and October 2009

The costs and risks associated with the proposed installation of emissions control equipment at the Columbia 1 and 2 coal-fired power plants.

Public Service Commission of Michigan (Docket No. U-15996) – July 2009

Comments on Consumer Energy's Electric Generation Alternatives Analysis for the Balanced Energy Initiative including the Proposed Karn-Weadock Coal Plant.

Public Service Commission of Michigan (Docket No. U-16000) – July 2009

Comments on Wolverine Power Cooperative's Electric Generation Alternatives Analysis for the Proposed Rogers City Coal Plant.

Georgia Public Service Commission (Docket No. 27800-U) – December 2008

The possible costs and risks of proceeding with the proposed Plant Vogtle Units 3 and 4 nuclear power plants.

Public Service Commission of Wisconsin (Docket No. 6680-CE-170) – August and September 2008

The risks associated with the proposed Nelson Dewey 3 baseload coal-fired power plant.

Indiana Utility Regulatory Commission (Cause No. 43114 IGCC 1) – July 2008

The estimated cost of Duke Energy Indiana's Edwardsport Project.

Public Service Commission of Maryland (Case 9127) – July 2008

The estimated cost of the proposed Calvert Cliffs Unit 3 nuclear power plant.

Ohio Power Siting Board (Case No. 06-1358-EL-BGN) – December 2007

AMP-Ohio's application for a Certificate of Environmental Compatibility and Public Need for a 960 MW pulverized coal generating facility.

U.S. Nuclear Regulatory Commission (Docket Nos. 50-247-LR, 50-286-LR) – November 2007 and February 2009

The available options for replacing the power generated at Indian Point Unit 2 and/or Unit 3.

West Virginia Public Service Commission (Case No. 06-0033-E-CN) – November 2007

Appalachian Power Company's application for a Certificate of Public Convenience and Necessity for a 600 MW integrated gasification combined cycle generating facility.

Iowa Utility Board (Docket No. GCU-07-01) – October 2007

Whether Interstate Power & Light Company's adequately considered the risks associated with building a new coal-fired power plant and whether that Company's participation in the proposed Marshalltown plant is prudent.

Virginia State Corporation Commission (Case No. PUE-2007-00066) – November 2007

Whether Dominion Virginia Power's adequately considered the risks associated with building the proposed Wise County coal-fired power plant and whether that Commission should grant a certificate of public convenience and necessity for the plant.

Louisiana Public Service Commission (Docket No. U-30192) – September 2007

The reasonableness of Entergy Louisiana's proposal to repower the Little Gypsy Unit 3 generating facility as a coal-fired power plant.

Arkansas Public Service Commission (Docket No. 06-154-U) – July 2007

The probable economic impact of the Southwestern Electric Power Company's proposed Hempstead coal-fired power plant project.

North Dakota Public Service Commission (Case Nos. PU-06-481 and 482) – May 2007 and April 2008

Whether the participation of Otter Tail Power Company and Montana-Dakota Utilities in the Big Stone II Generating Project is prudent.

Indiana Utility Regulatory Commission (Cause No. 43114) – May 2007

The appropriate carbon dioxide (“CO₂”) emissions prices that should be used to analyze the relative economic costs and benefits of Duke Energy Indiana and Vectren Energy Delivery of Indiana’s proposed Integrated Gasification Combined Cycle Facility and whether Duke and Vectren have appropriately reflected the capital cost of the proposed facility in their modeling analyses.

Public Service Commission of Wisconsin (Docket No. 6630-EI-113) – May and June 2007

Whether the proposed sale of the Point Beach Nuclear Plant to FPL Energy Point Beach, LLC, is in the interest of the ratepayers of Wisconsin Electric Power Company.

Florida Public Service Commission (Docket No. 070098-EI) – March 2007

Florida Light & Power Company’s need for and the economics of the proposed Glades Power Park.

Michigan Public Service Commission (Case No. 14992-U) – December 2006

The reasonableness of the proposed sale of the Palisades Nuclear Power Plant.

Minnesota Public Utilities Commission (Docket No. CN-05-619) – November 2006, December 2007, January 2008 and November 2008

Whether the co-owners of the proposed Big Stone II coal-fired generating plant have appropriately reflected the potential for the regulation of greenhouse gases in their analyses of the facility; and whether the proposed project is a lower cost alternative than renewable options, conservation and load management.

North Carolina Utilities Commission (Docket No. E-7, Sub 790) – September 2006 and January 2007

Duke’s need for two new 800 MW coal-fired generating units and the relative economics of adding these facilities as compared to other available options including energy efficiency and renewable technologies.

New Mexico Public Regulatory Commission (Case No. 05-00275-UT) – September 2006

Report to the New Mexico Commission on whether the settlement value of the adjustment for moving the 141 MW Afton combustion turbine merchant plant into rate base is reasonable.

Arizona Corporation Commission (Docket No. E-01345A-0816) – August and September 2006

Whether APS’s acquisition of the Sundance Generating Station was prudent and the reasonableness of the amounts that APS requested for fossil plant O&M.

U.S. District Court for the District of Montana (Billings Generation, Inc. vs. Electrical Controls, Inc, et al., CV-04-123-BLG-RFC) – August 2006

Quantification of plaintiff’s business losses during an extended power plant outage and plaintiff’s business earnings due to the shortening and delay of future plant outages.
[Confidential Expert Report]

Deposition in South Dakota Public Utility Commission Case No. EL05-022 – June 14, 2006

South Dakota Public Utility Commission (Case No. EL05-022) – May and June 2006

Whether the co-owners of the proposed Big Stone II coal-fired generating plant have appropriately reflected the potential for the regulation of greenhouse gases in their analyses of the alternatives to the proposed facility; the need and timing for new supply options in the co-owners' service territories; and whether there are alternatives to the proposed facility that are technically feasible and economically cost-effective.

Georgia Public Service Commission (Docket No. 22449-U) – May 2006

Georgia Power Company's request for an accounting order to record early site permitting and construction operating license costs for new nuclear power plants.

California Public Utilities Commission (Dockets Nos. A.05-11-008 and A.05-11-009) – April 2006

The estimated costs for decommissioning the Diablo Canyon, SONGS 2&3 and Palo Verde nuclear power plants and the annual contributions that are needed from ratepayers to assure that adequate funds will be available to decommission these plants at the projected ends of their service lives.

New Jersey Board of Public Utilities (Docket No. EM05020106) – November and December 2005 and March 2006

Joint Testimony with Bob Fagan and Bruce Biewald on the market power implications of the proposed merger between Exelon Corp. and Public Service Enterprise Group.

Virginia State Corporation Commission (Case No. PUE-2005-00018)– November 2005

The siting of a proposed 230 kV transmission line.

Iowa Utility Board (Docket No. SPU-05-15) – September and October 2005

The reasonableness of IPL's proposed sale of the Duane Arnold Energy Center nuclear plant.

New York State Department of Environmental Conservation (DEC #3-3346-00011/00002) – October 2005

The likely profits that Dynegy will earn from the sale of the energy and capacity of the Danskammer Generating Facility if the plant is converted from once-through to closed-cycle cooling with wet towers or to dry cooling.

Arkansas Public Service Commission (Docket 05-042-U) – July and August 2005

Arkansas Electric Cooperative Corporation's proposed purchase of the Wrightsville Power Facility.

Maine Public Utilities Commission (Docket No. 2005-17) – July 2005

Joint testimony with Peter LanzaLotta and Bob Fagan evaluating Eastern Maine Electric Cooperative's request for a CPCN to purchase 15 MW of transmission capacity from New Brunswick Power.

Federal Energy Regulatory Commission (Docket No. EC05-43-0000) – April and May 2005

Joint Affidavit and Supplemental Affidavit with Bruce Biewald on the market power aspects of the proposed merger of Exelon Corporation and Public Service Enterprise Group, Inc.

Maine Public Utilities Commission (Docket No. 2004-538 Phase II) – April 2005

Joint testimony with Peter Lanzalotta and Bob Fagan evaluating Maine Public Service Company's request for a CPCN to purchase 35 MW of transmission capacity from New Brunswick Power.

Maine Public Utilities Commission (Docket No. 2004-771) – March 2005

Analysis of Bangor Hydro-Electric's Petition for a Certificate of Public Convenience and Necessity to construct a 345 kV transmission line

**United States District Court for the Southern District of Ohio, Eastern Division
(Consolidated Civil Actions Nos. C2-99-1182 and C2-99-1250)**

Whether the public release of company documents more than three years old would cause competitive harm to the American Electric Power Company. [Confidential Expert Report]

New Jersey Board of Public Utilities (Docket No. EO03121014) – February 2005

Whether the Board of Public Utilities can halt further collections from Jersey Central Power & Light Company's ratepayers because there already are adequate funds in the company's decommissioning trusts for the Three Mile Island Unit No. 2 Nuclear Plant to allow for the decommissioning of that unit without endangered the public health and safety.

Maine Public Utilities Commission (Docket No. 2004-538) – January and March 2005

Analysis of Maine Public Service Company's request to construct a 138 kV transmission line from Limestone, Maine to the Canadian Border.

California Public Utilities Commission (Application No. AO4-02-026) – December 2004 and January 2005

Southern California Edison's proposed replacement of the steam generators at the San Onofre Unit 2 and Unit 3 nuclear power plants and whether the utility was imprudent for failing to initiate litigation against Combustion Engineering due to defects in the design of and materials used in those steam generators.

**United States District Court for the Southern District of Indiana, Indianapolis Division
(Civil Action No. IP99-1693) – December 2004**

Whether the public release of company documents more than three years old would cause competitive harm to the Cinergy Corporation. [Confidential Expert Report]

California Public Utilities Commission (Application No. AO4-01-009) – August 2004

Pacific Gas & Electric's proposed replacement of the steam generators at the Diablo Canyon nuclear power plant and whether the utility was imprudent for failing to initiate litigation against Westinghouse due to defects in the design of and materials used in those steam generators.

Public Service Commission of Wisconsin (Docket No. 6690-CE-187) – June, July and August 2004

Whether Wisconsin Public Service Corporation's request for approval to build a proposed 515 MW coal-burning generating facility should be granted.

Public Service Commission of Wisconsin (Docket No. 05-EI-136) – May and June 2004

Whether the proposed sale of the Kewaunee Nuclear Power Plant to a subsidiary of an out-of-state holding company is in the public interest.

Connecticut Siting Council (Docket No. 272) – May 2004

Whether there are technically viable alternatives to the proposed 345-kV transmission line between Middletown and Norwalk Connecticut and the length of the line that can be installed underground.

Arizona Corporation Commission (Docket No. E-01345A-03-0437 – February 2004

Whether Arizona Public Service Company should be allowed to acquire and include in rate base five generating units that were built by a deregulated affiliate.

State of Rhode Island Energy Facilities Siting Board (Docket No. SB-2003-1) – February 2004

Whether the cost of undergrounding a relocated 115kV transmission line would be eligible for regional cost socialization.

State of Maine Department of Environmental Protection (Docket No. A-82-75-0-X) – December 2003

The storage of irradiated nuclear fuel in an Independent Spent Fuel Storage Installation (ISFSI) and whether such an installation represents an air pollution control facility.

Rhode Island Public Utility Commission (Docket No. 3564) – December 2003 and January 2004

Whether Narragansett Electric Company should be required to install a relocated 115kV transmission line underground.

New York State Board on Electric Generation Siting and the Environment (Case No. 01-F-1276) – September, October and November 2003

The environmental, economic and system reliability benefits that can reasonably be expected from the proposed 1,100 MW TransGas Energy generating facility in Brooklyn, New York.

Wisconsin Public Service Commission (Case 6690-UR-115) - September and October 2003

The reasonableness of Wisconsin Public Service Corporation's decommissioning cost collections for the Kewaunee Nuclear Plant.

Oklahoma Corporation Commission (Cause No. 2003-121) – July 2003

Whether Empire District Electric Company properly reduced its capital costs to reflect the write-off of a portion of the cost of building a new electric generating facility.

Arkansas Public Service Commission (Docket 02-248-U) – May 2003

Entergy's proposed replacement of the steam generators and the reactor vessel head at the ANO Unit 1 Steam Generating Station.

Appellate Tax Board, State of Massachusetts (Docket No C258405-406) – May 2003

The physical nature of electricity and whether electricity is a tangible product or a service.

Maine Public Utilities Commission (Docket 2002-665-U) – April 2003

Analysis of Central Maine Power Company's proposed transmission line for Southern York County and recommendation of alternatives.

Massachusetts Legislature, Joint Committees on Government Regulations and Energy – March 2003

Whether PG&E can decide to permanently retire one or more of the generating units at its Salem Harbor Station if it is not granted an extension beyond October 2004 to reduce the emissions from the Station's three coal-fired units and one oil-fired unit.

New Jersey Board of Public Utilities (Docket No. ER02080614) – January 2003

The prudence of Rockland Electric Company's power purchases during the period August 1, 1999 through July 31, 2002.

New York State Board on Electric Generation Siting and the Environment (Case No. 00-F-1356) – September and October 2002 and January 2003

The need for and the environmental benefits from the proposed 300 MW Kings Park Energy generating facility.

Arizona Corporation Commission (Docket No. E-01345A-01-0822) – May 2002

The reasonableness of Arizona Public Service Company's proposed long-term power purchase agreement with an affiliated company.

New York State Board on Electric Generation Siting and the Environment (Case No. 99-F-1627) – March 2002

Repowering NYPA's existing Poletti Station in Queens, New York.

Connecticut Siting Council (Docket No. 217) – March 2002, November 2002, and January 2003

Whether the proposed 345-kV transmission line between Plumtree and Norwalk substations in Southwestern Connecticut is needed and will produce public benefits.

Vermont Public Service Board (Case No. 6545) – January 2002

Whether the proposed sale of the Vermont Yankee Nuclear Plant to Entergy is in the public interest of the State of Vermont and Vermont ratepayers.

Connecticut Department of Public Utility Control (Docket 99-09-12RE02) – December 2001

The reasonableness of adjustments that Connecticut Light and Power Company seeks to make to the proceeds that it received from the sale of Millstone Nuclear Power Station.

Connecticut Siting Council (Docket No. 208) – October 2001

Whether the proposed cross-sound cable between Connecticut and Long Island is needed and will produce public benefits for Connecticut consumers.

New Jersey Board of Public Utilities (Docket No. EM01050308) - September 2001

The market power implications of the proposed merger between Conectiv and Pepco.

Illinois Commerce Commission Docket No. 01-0423 – August, September, and October 2001

Commonwealth Edison Company's management of its distribution and transmission systems.

New York State Board on Electric Generation Siting and the Environment (Case No. 99-F-1627) - August and September 2001

The environmental benefits from the proposed 500 MW NYPA Astoria generating facility.

New York State Board on Electric Generation Siting and the Environment (Case No. 99-F-1191) - June 2001

The environmental benefits from the proposed 1,000 MW Astoria Energy generating facility.

New Jersey Board of Public Utilities (Docket No. EM00110870) - May 2001

The market power implications of the proposed merger between FirstEnergy and GPU Energy.

Connecticut Department of Public Utility Control (Docket 99-09-12RE01) - November 2000

The proposed sale of Millstone Nuclear Station to Dominion Nuclear, Inc.

Illinois Commerce Commission (Docket 00-0361) - August 2000

The impact of nuclear power plant life extensions on Commonwealth Edison Company's decommissioning costs and collections from ratepayers.

Vermont Public Service Board (Docket 6300) - April 2000

Whether the proposed sale of the Vermont Yankee nuclear plant to AmerGen Vermont is in the public interest.

Massachusetts Department of Telecommunications and Energy (Docket 99-107, Phase II) - April and June 2000

The causes of the May 18, 1999, main transformer fire at the Pilgrim generating station.

Connecticut Department of Public Utility Control (Docket 00-01-11) - March and April 2000

The impact of the proposed merger between Northeast Utilities and Con Edison, Inc. on the reliability of the electric service being provided to Connecticut ratepayers.

Connecticut Department of Public Utility Control (Docket 99-09-12) - January 2000
The reasonableness of Northeast Utilities plan for auctioning the Millstone Nuclear Station.

Connecticut Department of Public Utility Control (Docket 99-08-01) - November 1999
Generation, Transmission, and Distribution system reliability.

Illinois Commerce Commission (Docket 99-0115) - September 1999
Commonwealth Edison Company's decommissioning cost estimate for the Zion Nuclear Station.

Connecticut Department of Public Utility Control (Docket 99-03-36) - July 1999
Standard offer rates for Connecticut Light & Power Company.

Connecticut Department of Public Utility Control (Docket 99-03-35) - July 1999
Standard offer rates for United Illuminating Company.

Connecticut Department of Public Utility Control (Docket 99-02-05) - April 1999
Connecticut Light & Power Company stranded costs.

Connecticut Department of Public Utility Control (Docket 99-03-04) - April 1999
United Illuminating Company stranded costs.

Maryland Public Service Commission (Docket 8795) - December 1998
Future operating performance of Delmarva Power Company's nuclear units.

Maryland Public Service Commission (Dockets 8794/8804) - December 1998
Baltimore Gas and Electric Company's proposed replacement of the steam generators at the Calvert Cliffs Nuclear Power Plant. Future performance of nuclear units.

Indiana Utility Regulatory Commission (Docket 38702-FAC-40-S1) - November 1998
Whether the ongoing outages of the two units at the D.C. Cook Nuclear Plant were caused or extended by mismanagement.

Arkansas Public Service Commission (Docket 98-065-U) - October 1998
Entergy's proposed replacement of the steam generators at the ANO Unit 2 Steam Generating Station.

Massachusetts Department of Telecommunications and Energy (Docket 97-120) - October 1998
Western Massachusetts Electric Company's Transition Charge. Whether the extended 1996-1998 outages of the three units at the Millstone Nuclear Station were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 98-01-02) - September 1998
Nuclear plant operations, operating and capital costs, and system reliability improvement costs.

Illinois Commerce Commission (Docket 97-0015) - May 1998

Whether any of the outages of Commonwealth Edison Company's twelve nuclear units during 1996 were caused or extended by mismanagement. Whether equipment problems, personnel performance weaknesses, and program deficiencies could have been avoided or addressed prior to plant outages. Outage-related fuel and replacement power costs.

Public Service Commission of West Virginia (Case 97-1329-E-CN) - March 1998

The need for a proposed 765 kV transmission line from Wyoming, West Virginia, to Cloverdate, Virginia.

Illinois Commerce Commission (Docket 97-0018) - March 1998

Whether any of the outages of the Clinton Power Station during 1996 were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 97-05-12) - October 1997

The increased costs resulting from the ongoing outages of the three units at the Millstone Nuclear Station.

New Jersey Board of Public Utilities (Docket ER96030257) - August 1996

Replacement power costs during plant outages.

Illinois Commerce Commission (Docket 95-0119) - February 1996

Whether any of the outages of Commonwealth Edison Company's twelve nuclear units during 1994 were caused or extended by mismanagement. Whether equipment problems, personnel performance weaknesses, and program deficiencies could have been avoided or addressed prior to plant outages. Outage-related fuel and replacement power costs.

Public Utility Commission of Texas (Docket 13170) - December 1994

Whether any of the outages of the River Bend Nuclear Station during the period October 1, 1991, through December 31, 1993, were caused or extended by mismanagement.

Public Utility Commission of Texas (Docket 12820) - October 1994

Operations and maintenance expenses during outages of the South Texas Nuclear Generating Station.

Wisconsin Public Service Commission (Cases 6630-CE-197 and 6630-CE-209) - September and October 1994

The reasonableness of the projected cost and schedule for the replacement of the steam generators at the Point Beach Nuclear Power Plant. The potential impact of plant aging on future operating costs and performance.

Public Utility Commission of Texas (Docket 12700) - June 1994

Whether El Paso Electric Company's share of Palo Verde Unit 3 was needed to ensure adequate levels of system reliability. Whether the Company's investment in Unit 3 could be expected to generate cost savings for ratepayers within a reasonable number of years.

Arizona Corporation Commission (Docket U-1551-93-272) - May and June 1994

Southwest Gas Corporation's plastic and steel pipe repair and replacement programs.

Connecticut Department of Public Utility Control (Docket 92-04-15) - March 1994

Northeast Utilities management of the 1992/1993 replacement of the steam generators at Millstone Unit 2.

Connecticut Department of Public Utility Control (Docket 92-10-03) - August 1993

Whether the 1991 outage of Millstone Unit 3 as a result of the corrosion of safety-related plant piping systems was due to mismanagement.

Public Utility Commission of Texas (Docket 11735) - April and July 1993

Whether any of the outages of the Comanche Peak Unit 1 Nuclear Station during the period August 13, 1990, through June 30, 1992, were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 91-12-07) - January 1993 and August 1995

Whether the November 6, 1991, pipe rupture at Millstone Unit 2 and the related outages of the Connecticut Yankee and Millstone units were caused or extended by mismanagement. The impact of environmental requirements on power plant design and operation.

Connecticut Department of Public Utility Control (Docket 92-06-05) - September 1992

United Illuminating Company off-system capacity sales. [Confidential Testimony]

Public Utility Commission of Texas (Docket 10894) - August 1992

Whether any of the outages of the River Bend Nuclear Station during the period October 1, 1988, through September 30, 1991, were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 92-01-05) - August 1992

Whether the July 1991 outage of Millstone Unit 3 due to the fouling of important plant systems by blue mussels was the result of mismanagement.

California Public Utilities Commission (Docket 90-12-018) - November 1991, April 1992, June and July 1993

Whether any of the outages of the three units at the Palo Verde Nuclear Generating Station during 1989 and 1990 were caused or extended by mismanagement. Whether equipment problems, personnel performance weaknesses and program deficiencies could have been avoided or addressed prior to outages. Whether specific plant operating cost and capital expenditures were necessary and prudent.

Public Utility Commission of Texas (Docket 9945) - June 1991

Whether El Paso Electric Company's share of Palo Verde Unit 3 was needed to ensure adequate levels of system reliability. Whether the Company's investment in the unit could be expected to generate cost savings for ratepayers within a reasonable number of years. El Paso Electric Company's management of the planning and licensing of the Arizona Interconnection Project transmission line.

Arizona Corporation Commission (Docket U-1345-90-007) - December 1990 and April 1991
Arizona Public Service Company's management of the planning, construction and operation of the Palo Verde Nuclear Generating Station. The costs resulting from identified instances of mismanagement.

New Jersey Board of Public Utilities (Docket ER89110912J) - July and October 1990
The economic costs and benefits of the early retirement of the Oyster Creek Nuclear Plant. The potential impact of the unit's early retirement on system reliability. The cost and schedule for siting and constructing a replacement natural gas-fired generating plant.

Public Utility Commission of Texas (Docket 9300) - June and July 1990
Texas Utilities management of the design and construction of the Comanche Peak Nuclear Plant. Whether the Company was prudent in repurchasing minority owners' shares of Comanche Peak without examining the costs and benefits of the repurchase for its ratepayers.

Federal Energy Regulatory Commission (Docket EL-88-5-000) - November 1989
Boston Edison's corporate management of the Pilgrim Nuclear Station.

Connecticut Department of Public Utility Control (Docket 89-08-11) - November 1989
United Illuminating Company's off-system capacity sales.

Kansas State Corporation Commission (Case 164,211-U) - April 1989
Whether any of the 127 days of outages of the Wolf Creek generating plant during 1987 and 1988 were the result of mismanagement.

Public Utility Commission of Texas (Docket 8425) - March 1989
Whether Houston Lighting & Power Company's new Limestone Unit 2 generating facility was needed to provide adequate levels of system reliability. Whether the Company's investment in Limestone Unit 2 would provide a net economic benefit for ratepayers.

Illinois Commerce Commission (Dockets 83-0537 and 84-0555) - July 1985 and January 1989
Commonwealth Edison Company's management of quality assurance and quality control activities and the actions of project contractors during construction of the Byron Nuclear Station.

New Mexico Public Service Commission (Case 2146, Part II) - October 1988
The rate consequences of Public Service Company of New Mexico's ownership of Palo Verde Units 1 and 2.

United States District Court for the Eastern District of New York (Case 87-646-JBW) - October 1988
Whether the Long Island Lighting Company withheld important information from the New York State Public Service Commission, the New York State Board on Electric Generating Siting and the Environment, and the U.S. Nuclear Regulatory Commission.

Public Utility Commission of Texas (Docket 6668) - August 1988 and June 1989

Houston Light & Power Company's management of the design and construction of the South Texas Nuclear Project. The impact of safety-related and environmental requirements on plant construction costs and schedule.

Federal Energy Regulatory Commission (Docket ER88-202-000) - June 1988

Whether the turbine generator vibration problems that extended the 1987 outage of the Maine Yankee nuclear plant were caused by mismanagement.

Illinois Commerce Commission (Docket 87-0695) - April 1988

Illinois Power Company's planning for the Clinton Nuclear Station.

North Carolina Utilities Commission (Docket E-2, Sub 537) - February 1988

Carolina Power & Light Company's management of the design and construction of the Harris Nuclear Project. The Company's management of quality assurance and quality control activities. The impact of safety-related and environmental requirements on construction costs and schedule. The cost and schedule consequences of identified instances of mismanagement.

Ohio Public Utilities Commission (Case 87-689-EL-AIR) - October 1987

Whether any of Ohio Edison's share of the Perry Unit 2 generating facility was needed to ensure adequate levels of system reliability. Whether the Company's investment in Perry Unit 1 would produce a net economic benefit for ratepayers.

North Carolina Utilities Commission (Docket E-2, Sub 526) - May 1987

Fuel factor calculations.

New York State Public Service Commission (Case 29484) - May 1987

The planned startup and power ascension testing program for the Nine Mile Point Unit 2 generating facility.

Illinois Commerce Commission (Dockets 86-0043 and 86-0096) - April 1987

The reasonableness of certain terms in a proposed Power Supply Agreement.

Illinois Commerce Commission (Docket 86-0405) - March 1987

The in-service criteria to be used to determine when a new generating facility was capable of providing safe, adequate, reliable and efficient service.

Indiana Public Service Commission (Case 38045) - November 1986

Northern Indiana Public Service Company's planning for the Schaefer Unit 18 generating facility. Whether the capacity from Unit 18 was needed to ensure adequate system reliability. The rate consequences of excess capacity on the Company's system.

Superior Court in Rockingham County, New Hampshire (Case 86E328) - July 1986

The radiation effects of low power testing on the structures, equipment and components in a new nuclear power plant.

New York State Public Service Commission (Case 28124) - April 1986 and June 1987

The terms and provisions in a utility's contract with an equipment supplier. The prudence of the utility's planning for a new generating facility. Expenditures on a canceled generating facility.

Arizona Corporation Commission (Docket U-1345-85) - February 1986

The construction schedule for Palo Verde Unit No. 1. Regulatory and technical factors that would likely affect future plant operating costs.

New York State Public Service Commission (Case 29124) - December 1985 and January 1986

Niagara Mohawk Power Corporation's management of construction of the Nine Mile Point Unit No. 2 nuclear power plant.

New York State Public Service Commission (Case 28252) - October 1985

A performance standard for the Shoreham nuclear power plant.

New York State Public Service Commission (Case 29069) - August 1985

A performance standard for the Nine Mile Point Unit No. 2 nuclear power plant.

Missouri Public Service Commission (Cases ER-85-128 and EO-85-185) - July 1985

The impact of safety-related regulatory requirements and plant aging on power plant operating costs and performance. Regulatory factors and plant-specific design features that will likely affect the future operating costs and performance of the Wolf Creek Nuclear Plant.

Massachusetts Department of Public Utilities (Case 84-152) - January 1985

The impact of safety-related regulatory requirements and plant aging on power plant operating costs and performance. Regulatory factors and plant-specific design features that will likely affect the future operating costs and performance of the Seabrook Nuclear Plant.

Maine Public Utilities Commission (Docket 84-113) - September 1984

The impact of safety-related regulatory requirements and plant aging on power plant operating costs and performance. Regulatory factors and plant-specific design features that will likely affect the future operating costs and performance of the Seabrook Nuclear Plant.

South Carolina Public Service Commission (Case 84-122-E) - August 1984

The repair and replacement strategy adopted by Carolina Power & Light Company in response to pipe cracking at the Brunswick Nuclear Station. Quantification of replacement power costs attributable to identified instances of mismanagement.

Vermont Public Service Board (Case 4865) - May 1984

The repair and replacement strategy adopted by management in response to pipe cracking at the Vermont Yankee nuclear plant.

New York State Public Service Commission (Case 28347) -January 1984

The information that was available to Niagara Mohawk Power Corporation prior to 1982 concerning the potential for cracking in safety-related piping systems at the Nine Mile Point Unit No. 1 nuclear plant.

New York State Public Service Commission (Case 28166) - January 1983 and February 1984

Whether the January 25, 1982, steam generator tube rupture at the Ginna Nuclear Plant was caused by mismanagement.

U.S. Nuclear Regulatory Commission (Case 50-247SP) - May 1983

The economic costs and benefits of the early retirement of the Indian Point nuclear plants.

REPORTS, ARTICLES, AND PRESENTATIONS

Report on the Kemper IGCC Project: Cost and Schedule Risks. November 2012.

The Prairie State Coal Plant: the Reality vs. the Promise. August 2012.

The Impact of EPA's Proposed 316(b) Existing Facility Rule on Electric System Reliability, July 2011.

The Economics of Existing Coal-Fired Power Plants, Presentation at EUCI Conference in St. Louis, MO, November 2010.

Presentation to the Indiana Utility Regulatory Commission on the Need for the Proposed Duke Energy Indiana Edwardsport IGCC Project, November 2010.

Reply Comments on Portland General Electric Company's 2009 Integrated Resource Plan, September 2010.

Presentation to the Oregon Public Utility Commission on Portland General Electric Company's 2009 Integrated Resource Plan, May 2010.

Comments on Portland General Electric Company's 2009 Integrated Resource Plan, May 2010.

Comments on the Facility Cost Report for Tenaska's Proposed Taylorville IGCC Plant, April 2010.

Comments on City of Holland Board of Public Work's 2010 Power Supply Plan, April 2010.

Phasing Out Federal Subsidies for Coal, April 2010.

Comments on Draft Portland General Electric Company 2009 Integrated Resource Plan, October 2009.

The Economic Impact of Restricting Mountaintop/Valley Fill Coal Mining in Central Appalachia, August 2009.

Energy Future: A Green Energy Alternative for Michigan, report, July 2009.

Energy Future: A Green Energy Alternative for Michigan, presentation, July 2009.

Preliminary Assessment of East Kentucky Power Cooperative's 2009 Resource Plan, June 2009.

The Financial Risks to Old Dominion Electric Cooperative's Consumer-Members of Building and Operating the Proposed Cypress Creek Power Station, April 2009.

An Assessment of Santee Cooper's 2008 Resource Planning, April 2009.

Nuclear Loan Guarantees: Another Taxpayer Bailout Ahead, Report for the Union of Concerned Scientists, March 2009.

New Hampshire Senate Bill 152: Merrimack Station Scrubber, March 2009.

The Risks of Building and Operating Plant Washington, Presentation to the Sustainable Atlanta Roundtable, December 2008.

The Risks of Building and Operating Plant Washington, Report and Presentation to EMC Board Members, December 2008.

Don't Get Burned, the Risks of Investing in New Coal-Fired Power Plants, Presentation at the University of California at Berkeley Energy and Resources Group Colloquium, October 2008.

Don't Get Burned, the Risks of Investing in New Coal-Fired Power Plants, Presentation at Georgia Tech University, October 2008.

Nuclear Power Plant Construction Costs, Synapse Energy Economics, July 2008.

Coal-Fired Power Plant Construction Costs, Synapse Energy Economics, July 2008.

Synapse 2008 CO₂ Price Forecasts, Synapse Energy Economics, July 2008.

Don't Get Burned, the Risks of Investing in New Coal-Fired Power Plants, Presentation at the NARUC ERE Committee, NARUC Summer Meetings, July 2008.

Are There Nukes In Our Future, Presentation at the NASUCA Summer Meetings, June 2008.

Risky Appropriations: Gambling US Energy Policy on the Global Nuclear Energy Partnership, Report for Friends of the Earth, the Institute for Policy Studies, the Government Accountability Project, and the Southern Alliance for Clean Energy, March 2008.

Don't Get Burned, the Risks of Investing in New Coal-Fired Power Plants, Presentation to the New York Society of Securities Analysts, February 26, 2008.

Don't Get Burned, Report for the Interfaith Center for Corporate Responsibility, February 2008.

The Risks of Participating in the AMPGS Coal Plant, Report for NRDC, February 2008.

Kansas is Not Alone, the New Climate for Coal, Presentation to members of the Kansas State Legislature, January 22, 2008.

The Risks of Building New Nuclear Power Plants, Presentation to the Utah State Legislature Public Utilities and Technology Committee, September 19, 2007.

The Risks of Building New Nuclear Power Plants, Presentation to Moody's and Standard & Poor's rating agencies, May 17, 2007.

The Risks of Building New Nuclear Power Plants, U.S. Senate and House of Representative Briefings, April 20, 2007.

Carbon Dioxide Emissions Costs and Electricity Resource Planning, New Mexico Public Regulation Commission, Case 06-00448-UT, March 28, 2007, with Anna Sommer.

The Risks of Building New Nuclear Power Plants, Presentation to the New York Society of Securities Analysts, June 8, 2006.

Conservation and Renewable Energy Should be the Cornerstone for Meeting Future Natural Gas Needs. Presentation to the Global LNG Summit, June 1, 2004. Presentation given by Cliff Chen.

Comments on natural gas utilities' Phase I Proposals for pre-approved full cost recovery of contracts with liquid natural gas (LNG) suppliers and the costs of interconnecting their systems with LNG facilities. Comments in California Public Utilities Commission Rulemaking 04-01-025. March 23, 2004.

The 2003 Blackout: Solutions that Won't Cost a Fortune, The Electricity Journal, November 2003, with David White, Amy Roschelle, Paul Peterson, Bruce Biewald, and William Steinhurst.

The Impact of Converting the Cooling Systems at Indian Point Units 2 and 3 on Electric System Reliability. An Analysis for Riverkeeper, Inc. November 3, 2003.

The Impact of Converting Indian Point Units 2 and 3 to Closed-Cycle Cooling Systems with Cooling Towers on Energy's Likely Future Earnings. An Analysis for Riverkeeper, Inc. November 3, 2003.

Entergy's Lost Revenues During Outages of Indian Point Units 2 and 3 to Convert to Closed-Cycle Cooling Systems. An Analysis for Riverkeeper, Inc. November 3, 2003.

Power Plant Repowering as a Strategy for Reducing Water Consumption at Existing Electric Generating Facilities. A presentation at the May 2003 Symposium on Cooling Water Intake Technologies to Protect Aquatic Organisms. May 6, 2003.

Financial Insecurity: The Increasing Use of Limited Liability Companies and Multi-tiered Holding Companies to Own Electric Generating Plants. A presentation at the 2002 NASUCA Annual Meeting. November 12, 2002.

Determining the Need for Proposed Overhead Transmission Facilities. A Presentation by David Schlissel and Paul Peterson to the Task Force and Working Group for Connecticut Public Act 02-95. October 17, 2002.

Future PG&E Net Revenues From The Sale of Electricity Generated at its Brayton Point Station. An Analysis for the Attorney General of the State of Rhode Island. October 2, 2002.

PG&E's Net Revenues From The Sale of Electricity Generated at its Brayton Point Station During the Years 1999-2002. An Analysis for the Attorney General of the State of Rhode Island. October 2, 2002.

Financial Insecurity: The Increasing Use of Limited Liability Companies and Multi-Tiered Holding Companies to Own Nuclear Power Plants. A Synapse report for the STAR Foundation and Riverkeeper, Inc., by David Schlissel, Paul Peterson, and Bruce Biewald, August 7, 2002.

Comments on EPA's Proposed Clean Water Act Section 316(b) for Cooling Water Intake Structures at Phase II Existing Facilities, on behalf of Riverkeeper, Inc., by David Schlissel and Geoffrey Keith, August 2002.

The Impact of Retiring the Indian Point Nuclear Power Station on Electric System Reliability. A Synapse Report for Riverkeeper, Inc. and Pace Law School Energy Project. May 7, 2002.

Preliminary Assessment of the Need for the Proposed Plumtree-Norwalk 345-kV Transmission Line. A Synapse Report for the Towns of Bethel, Redding, Weston, and Wilton Connecticut. October 15, 2001.

ISO New England's Generating Unit Availability Study: Where's the Beef? A Presentation at the June 29, 2001 Restructuring Roundtable.

Clean Air and Reliable Power: Connecticut Legislative House Bill HB6365 will not Jeopardize Electric System Reliability. A Synapse Report for the Clean Air Task Force. May 2001.

Room to Breathe: Why the Massachusetts Department of Environmental Protection's Proposed Air Regulations are Compatible with Reliability. A Synapse Report for MASSPIRG and the Clean Water Fund. March 2001.

Generator Outage Increases: A Preliminary Analysis of Outage Trends in the New England Electricity Market, a Synapse Report for the Union of Concerned Scientists, January 7, 2001.

Cost, Grid Reliability Concerns on the Rise Amid Restructuring, with Charlie Harak, Boston Business Journal, August 18-24, 2000.

Report on Indian Point 2 Steam Generator Issues, Schlissel Technical Consulting, Inc., March 10, 2000.

Preliminary Expert Report in Case 96-016613, Cities of Wharton, Pasadena, et al v. Houston Lighting & Power Company, October 28, 1999.

Comments of Schlissel Technical Consulting, Inc. on the Nuclear Regulatory Commission's Draft Policy Statement on Electric Industry Economic Deregulation, February 1997.

Report to the Municipal Electric Utility Association of New York State on the Cost of Decommissioning the Fitzpatrick Nuclear Plant, August 1996.

Report to the Staff of the Arizona Corporation Commission on U.S. West Corporation's telephone cable repair and replacement programs, May, 1996.

Nuclear Power in the Competitive Environment, NRRI Quarterly Bulletin, Vol. 16, No. 3, Fall 1995.

Nuclear Power in the Competitive Environment, presentation at the 18th National Conference of Regulatory Attorneys, Scottsdale, Arizona, May 17, 1995.

The Potential Safety Consequences of Steam Generator Tube Cracking at the Byron and Braidwood Nuclear Stations, a report for the Environmental Law and Policy Center of the Midwest, 1995.

Report to the Public Policy Group Concerning Future Trojan Nuclear Plant Operating Performance and Costs, July 15, 1992.

Report to the New York State Consumer Protection Board on the Costs of the 1991 Refueling Outage of Indian Point 2, December 1991.

Preliminary Report on Excess Capacity Issues to the Public Utility Regulation Board of the City of El Paso, Texas, April 1991.

Nuclear Power Plant Construction Costs, presentation at the November, 1987, Conference of the National Association of State Utility Consumer Advocates.

Comments on the Final Report of the National Electric Reliability Study, a report for the New York State Consumer Protection Board, February 27, 1981.

OTHER SIGNIFICANT INVESTIGATIONS AND LITIGATION SUPPORT WORK

Reviewed the salt deposition mitigation strategy proposed for Reliant Energy's repowering of its Astoria Generating Station. October 2002 through February 2003.

Assisted the Connecticut Office of Consumer Counsel in reviewing the auction of Connecticut Light & Power Company's power purchase agreements. August and September, 2000.

Assisted the New Jersey Division of the Ratepayer Advocate in evaluating the reasonableness of Atlantic City Electric Company's proposed sale of its fossil generating facilities. June and July, 2000.

Investigated whether the 1996-1998 outages of the three Millstone Nuclear Units were caused or extended by mismanagement. 1997 and 1998. Clients were the Connecticut Office of Consumer Counsel and the Office of the Attorney General of the Commonwealth of Massachusetts.

Investigated whether the 1995-1997 outages of the two units at the Salem Nuclear Station were caused or extended by mismanagement. 1996-1997. Client was the New Jersey Division of the Ratepayer Advocate.

Assisted the Associated Industries of Massachusetts in quantifying the stranded costs associated with utility generating plants in the New England states. May through July, 1996

Investigated whether the December 25, 1993, turbine generator failure and fire at the Fermi 2 generating plant was caused by Detroit Edison Company's mismanagement of fabrication, operation or maintenance. 1995. Client was the Attorney General of the State of Michigan.

Investigated whether the outages of the two units at the South Texas Nuclear Generating Station during the years 1990 through 1994 were caused or extended by mismanagement. Client was the Texas Office of Public Utility Counsel.

Assisted the City Public Service Board of San Antonio, Texas in litigation over Houston Lighting & Power Company's management of operations of the South Texas Nuclear Generating Station.

Investigated whether outages of the Millstone nuclear units during the years 1991 through 1994 were caused or extended by mismanagement. Client was the Office of the Attorney General of the Commonwealth of Massachusetts.

Evaluated the 1994 Decommissioning Cost Estimate for the Maine Yankee Nuclear Plant. Client was the Public Advocate of the State of Maine.

Evaluated the 1994 Decommissioning Cost Estimate for the Seabrook Nuclear Plant. Clients were investment firms that were evaluating whether to purchase the Great Bay Power Company, one of Seabrook's minority owners.

Investigated whether a proposed natural-gas fired generating facility was need to ensure adequate levels of system reliability. Examined the potential impacts of environmental regulations on the unit's expected construction cost and schedule. 1992. Client was the New Jersey Rate Counsel.

Investigated whether Public Service Company of New Mexico management had adequately disclosed to potential investors the risk that it would be unable to market its excess generating capacity. Clients were individual shareholders of Public Service Company of New Mexico.

Investigated whether the Seabrook Nuclear Plant was prudently designed and constructed. 1989. Clients were the Connecticut Office of Consumer Counsel and the Attorney General of the State of Connecticut.

Investigated whether Carolina Power & Light Company had prudently managed the design and construction of the Harris nuclear plant. 1988-1989. Clients were the North Carolina Electric Municipal Power Agency and the City of Fayetteville, North Carolina.

Investigated whether the Grand Gulf nuclear plant had been prudently designed and constructed. 1988. Client was the Arkansas Public Service Commission.

Reviewed the financial incentive program proposed by the New York State Public Service Commission to improve nuclear power plant safety. 1987. Client was the New York State Consumer Protection Board.

Reviewed the construction cost and schedule of the Hope Creek Nuclear Generating Station. 1986-1987. Client was the New Jersey Rate Counsel.

Reviewed the operating performance of the Fort St. Vrain Nuclear Plant. 1985. Client was the Colorado Office of Consumer Counsel.

WORK HISTORY

- 2010 - President, Schlissel Technical Consulting, Inc.
- 2000 - 2009: Senior Consultant, Synapse Energy Economics, Inc.
- 1994 - 2000: President, Schlissel Technical Consulting, Inc.
- 1983 - 1994: Director, Schlissel Engineering Associates
- 1979 - 1983: Private Legal and Consulting Practice
- 1975 - 1979: Attorney, New York State Consumer Protection Board
- 1973 - 1975: Staff Attorney, Georgia Power Project

EDUCATION

- 1983-1985: Massachusetts Institute of Technology
Special Graduate Student in Nuclear Engineering and Project Management,
- 1973: Stanford Law School,
Juris Doctor

1969: Stanford University
Master of Science in Astronautical Engineering,

1968: Massachusetts Institute of Technology
Bachelor of Science in Astronautical Engineering,

PROFESSIONAL MEMBERSHIPS

- New York State Bar since 1981
- American Nuclear Society

Exhibit DAS-2